

PRESIDENT'S MESSAGE

As this issue of TIP goes to press, we are being notified of a forthcoming opportunity to vote on a revised name for Division 14--the "Division of Industrial and Organizational Psychology." If an informal vote and the sentiments expressed at our business meeting of last year are prophetic, we will overwhelmingly approve the new name. Surely the implication is present that if we change our name somewhat we should, perhaps, also change our "game" a bit. The issues of "where" and "how" are matters for sheerest speculation, yet few would doubt that we find ourselves in the midst of a social revolution with implications for our very existence. On the continuum of possible responses either extreme is probably undesirable. Clearly, it is disruptive and inefficient for us to be so sensitive and so ill-prepared that we fall into some reflexly initiated organizational convulsion each time we are stimulated by a new crisis. On the other hand, if we are completely insensitive and unresponsive, we will doubtless share the fate of other organisms and organizations that failed to adapt.

I think every reader of TIP will be more comfortable knowing that your Executive Committee is actively concerned with our posture and our responsiveness in a time of great social change. As our most recent Past-President said a few weeks ago, "we probably need a standing committee concerned with public policy (or social issues) to help ease Division 14 into some visible and effective relationship with our times." Such a committee could help us to define a wise and moderate position. It could, indeed, help us to define a wise and moderate position. It could, indeed, help us to define the way our "game" should change--along some dimension of greater responsiveness to change itself.

Sincerely,


William A. Owens

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OFFICIAL DIVISION BUSINESS

Highlights of the Winter Executive Committee Meeting¹

The Division account had a balance of \$4506 and the Cattell Fund account a balance of \$637 on December 31.

The Fellowship Committee is soliciting Division Fellows for nominations of Members they would be willing to sponsor for Fellow status.

The Membership Committee was instructed to review the rules for transferring from Associate to Member status, with the objective of streamlining same if possible.

Four subcommittees of the Education and Training Committee are actively engaged in: (1) organizing an invitational conference on the education of industrial-organizational psychologists, (2) revising the Division guidelines for doctoral education, (3) preparing an interim procedure for evaluating graduate programs in industrial-organizational psychology, and (4) improving communications between academic and nonacademic members of the Division.

The Workshop Committee netted \$240 from its activities last September and is planning a five-session workshop for next September.

Brochures describing the Cattell and Dissertation Awards are being mailed to Division members and other appropriate recipients by the Scientific Affairs Committee.

The Editor of TIP and a committee he is to name to assist him will review operations of the Division Newsletter with respect to possibilities for reducing the costs of publishing and increasing revenues. Recommendations for accomplishing these objectives will be reported to the Executive Committee at its June Meeting.

The Program Committee is planning the Division program for the APA meetings in Miami (September 4-8). The Division has been allocated 29 hours for substantive meetings, 2 hours for invited speakers and an unspecified number of conversation hours. The Division Business Meeting and Social Hour is to be scheduled for Saturday, September 5.

The brochures prepared by the Public Relations Committee, titled "The Industrial Psychologist" and "A Career in Industrial Psychology," are available from APA for a nominal charge.

The Executive Committee went on record with respect to complaints of professional misconduct made to APA to the effect that the APA Committee on Scientific and Professional Ethics and Conduct be asked to consider submitting ethical cases involving industrial-organizational psychologists to the Division Professional Affairs Committee for review and recommended action.

The Special Interests Committee is actively concerned with social and political action within APA and the stance our Division should take with respect to same. The committee was instructed to review the matter with appropriate persons and report back to the Executive Committee in June.

The Ad Hoc Scholarship Fund Committee is continuing to investigate various possibilities for obtaining funds to provide scholarship support to graduate students majoring in industrial-organizational psychology.

An ad hoc committee, consisting of Paul Thayer (Chairman), Herb Meyer and Stan Seashore, appointed to consider a possible award to past presidents of the Division, recommended that a properly inscribed paperweight be awarded to each past president and to all future presidents upon completion of their terms of office. The recommendations were accepted and the committee was instructed to have the awards for past presidents prepared for presentation at the Business Meeting in September.

The Executive Committee formally acted to change the name of the Division to the "Division of Industrial and Organizational Psychology" (see notice on page 4).

Consideration was given to the appointment of an ad hoc committee to examine the functions, structure and image of our Division. Suggestions are being sought and further consideration will be given this matter in June.

Consideration also was given to restructuring the format of the Division Business Meeting in September. A number of suggestions are being given further thought.

Division representatives to APA Council reported that the three major issues currently before the Council are: (1) Membership of Council, (2) Black psychologists, and (3) Accreditation of graduate programs in professional psychology.

¹ As a means of reducing the cost of publishing TIP, only the highlights of the Executive Committee will be published. Anyone wishing a complete copy of the minutes can obtain them by writing the Secretary, Donald L. Grant, 195 Broadway, Room 2122, New York City, New York 10007.

ANNOUNCEMENTS

Notification of Proposed Change of Name

At its January meeting the Executive Committee voted to recommend a change in the name of our Division, to notify our members of the recommendation in this issue of TIP, and to conduct a mail ballot of all members on the matter two months after publication of this notice.

If approved by a majority of our members, the name of the Division will become "Division of Industrial and Organizational Psychology." The purpose of the change is that of better adapting the name of our Division to its stated purpose, i.e., "...to promote human welfare through the various applications of psychology to all types of organizations providing goods or services, such as manufacturing concerns, commercial enterprises, and public agencies."

A change in the bylaws of our Division will, of course, be required. Wherever "Industrial Psychology" or similar references appear in our bylaws, a change to "Industrial and Organizational Psychology" will, if approved, be made. It is hoped, of course, that the proposed change would encourage many psychologists now believing themselves excluded from our Division to apply for membership.

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Changed Your Address?

When you change your address, please notify APA promptly. Your journals and all Division mailings are sent to the address listed in the APA records. Whatever is mailed to you by our Division (TIP, ballots, etc.) depend on mailing tapes furnished us by the APA central office.

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M. E. E. T.

Steve Temlock of J.C. Penney is in charge of an experimental publication of the Division of Personnel Psychology of the New York State Psychological Association. The publication, Metro Employment Exchange Tradewinds (MEET) is designed to facilitate matching qualified individuals and interested companies in a professional manner. It is operating only on a local level. The MEET Newsletter is sent to members of the interested colleges and universities and participating companies.

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OTHER ANNOUNCEMENTS

Joseph M. Rich, formerly manager of Organization Planning at St. Regis Paper is now Associate Professor of Management at Rutgers.

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Robert F. Morrison formerly manager of the Personnel Research Division of Sun Oil, is currently Visiting Professor at the West Virginia University College of Commerce in Morgantown, West Virginia.

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Marv Dunnette recently addressed the Section of Industrial Psychologists of the Illinois Psychology Association and Bill Owens will address that group in a joint meeting with the American Institute of Industrial Engineers. Dunnette spoke on sensitivity training and Owens will discuss the use of biographical antecedents as predictors in engineering training and engineering job performance.

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T.J. Carron, formerly with the Detroit Laboratories of Ethyl Corporation is now in their corporate headquarters in charge of Management Development and Training in Richmond, Virginia.

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Peter Vygantas formerly Director of Employee Relations--Flight with American Airlines is now Assistant Vice President--Industrial Relations with Sky Chefs, Inc., in New York City.

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Integrating the Organization - A Symposium

The Krannert Graduate School of Industrial Administration at Purdue University and The Free Press are presenting a symposium on INTEGRATING THE ORGANIZATION to be held at the Krannert School in West Lafayette, Indiana on April 28 and 29, 1970. The symposium is to consist of a set of original papers which focus on problems of minority group members in organizations.

The papers build a bridge of some significance between the research and theory of the social scientist and the world of action of the organizational administrator. In addition, it is hoped that the symposium will stimulate experimental research of both laboratory and field varieties which deal directly with problems of minorities in organizations.

Each paper covers a different problem area, e.g., leadership--the Negro in the supervisory role, and the Negro as subordinate. The papers approach the problems of integrating organizations in heuristic and adventuresome ways. Interesting and testable propositions are derived--it is hoped that such propositions will lead to innovative social research and social action.

The papers will be published by the Free Press as a book edited by Howard L. Fromkin and John J. Sherwood, professors of social psychology in the Krannert School.

The participants are: Patricia Cain Smith and Robert J. Guion, "Motivation"; Avner M. Porat, Edward C. Ryterband, and Bernard M. Bass, "Occupational Choice"; Donald C. King and Bernard M. Bass, "Leadership, Power, and Influence"; Robert P. Quinn, "Role Theory"; Lyman W. Porter, "Communication Structure"; Donald D. Penner, "Social Structure"; Harry Triandis, "Social Perception"; Marvin D. Dunnette, "Selection and Placement"; Lowell W. Hellervik, "Behavioral Change"; Harold B. Gerard, "Classroom Integration"; and Irwin Katz, "Personality and Culture."

Interested persons are invited to attend.

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APA Board of Directors Adopts Statement
on Psychological Assessment and Public Policy

In response to a growing number of inquiries the APA Board of Directors has adopted a public policy statement on the purposes and applications of psychological assessment (testing).

The statement notes: "In attempting to understand others and to predict how they will function under various circumstances, all of us utilize a great variety of assessment methods-- observations, careful or casual, interviews, formal or informal, and comments and recommendations based on varying degrees of acquaintance with the person being judged. Specialized psychological assessment techniques have been developed as refinements on these general methods as supplements to them."

The statement outlines several policy implications that follow the essential features of psychological assessment:

(1) "The individual assessed should be protected against unwarranted inferences by person not equipped with the requisite background knowledge.

(2) "The individual assessed should be protected against unfavorable evaluation based on obsolete information. All proposals for data banks and permanent record systems must grapple with this problem and provide appropriate safeguards for verifying the accuracy of the records and for discarding periodically the obsolete information.

(3) "The individual must be protected against unnecessary intrusions into his privacy. Unnecessary tests should not be administered and unnecessary questions should not be asked.

(4) "Whatever policies are set up to insure these kinds of protection should be of such a nature as to maintain conditions which will facilitate the research upon which new and improved assessment procedures can be based."

The statement warns however, that: "Flat prohibitions of certain kinds of tests or questions would retard research on the ways in which such tests and questions might be validly used. To require the destruction of all records of test scores and protocols along with the interpretations derived from them would make impossible some very significant kinds of longitudinal research on personality.

"The objective of whatever policies are adopted should be to protect the right of each individual to be soundly evaluated, realizing that to do this requires a constant effort to improve the techniques by means of which evaluations are made. The proper control is to vest responsibility in the person carrying out the assessment rather than to place arbitrary restrictions on the methods he is permitted to use."

The statement emphasizes that one of the keys to valid psychological testing is that a competent individual make the decisions. To insure this, the Board states, (a) "It is the responsibility of organizations and agencies in which assessment is carried on to place such persons in charge. (b) It is the responsibility of universities and colleges to educate them in such a way that they can carry out this complex task. (c) It is the responsibility of professional societies, such as the APA, to formulate standards and ethical codes controlling their activity."

In summary the statement re-emphasizes: "The central concept governing what information is to be obtained from a person whose characteristics are to be assessed for a particular purpose is relevance. The burden of proof that assessment techniques are relevant to the situation falls on the professional person responsible for the undertaking. His competence is the foundation on which the whole structure must rest.

"The right of an individual to decline to be assessed or to refuse to answer questions he considers improper or impertinent has never been and should not be questioned. This right should be pointed out to the examinee, and, regarding the confidentiality of the results, whenever possible, he should be told who will have access to the information and for what purposes."

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Psychologist Chosen For White House Research Post

Raymond A. Bauer has been chosen by the White House to help initiate the work of the National Goals Research Staff.

The primary task of the NGRS is to develop a system of social indicators and formulate national goals in preparation for annual reports on the social health of the nation--the first of which is due July 4.

* * * * *

... Sen. George S. McGovern (D-S.D.) has introduced legislation to establish a National Institute for the Social Sciences to conduct and coordinate Federally supported research on the nation's pressing social problems.

The institute, which would be located in Washington, D.C., would serve Congress and the Executive Branch by providing a central body of information to be used in formulating and evaluating national programs.

* * * * *

The world's first university devoted entirely to applied behavioral science will be built near Dulles Airport outside Washington, D.C., the National Training Laboratories has announced.

The institution initially will have two divisions--the Division of Professional Training and the Division of Client Services.

The university will include a Diagnostic and Growth Center, a Study Center in Inquiry and Action, a Center for the Development of Educational Technology and library, research and conference facilities.

Two new types of degrees will be offered by the university--a post-doctoral master's degree in applied behavioral science and a post-doctoral master's degree in humanistic psychology. The degree programs initially will be for students who are taking the degree concurrently with a doctoral program at another university and for post-doctoral fellows.

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New Reading

Manpower Research Projects, catalog of the manpower research contracts and grants active during the year ended June 30, 1969 is now available. The catalog lists the 230 research reports received since 1963, describes the 222 projects ongoing at the end of the year and the 70 projects completed during the year. Single copies available without charge: U.S. Department of Labor, Manpower Administration, Washington, D. C. 20210.

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From the Missouri Newsletter

The issue of involvement in social action seems to be the focus of attention for many psychologists right now (e.g., the APA convention theme "Psychology and the Problems of Society"). One frequently and legitimately raised question is how much are psychologists actually doing rather than just talking. To quote from an editorial entitled "Psychologists Remiss" in the Tennessee Psychologist:

"Interesting indeed is the zest with which some psychologists call for "social action." One wonders if this enthusiasm is not similar to the ardor with which many psychologists talk about action within their science-profession--and in turn do precious little to implement their ideas and to advance the contributions of psychology to the general weal. Perhaps one witnesses here a characteristic which often plagues adolescents, viz., a breezy kind of idealism made manifest by fellows who simply are missing when the work, sometimes tedious and taxing but nonetheless essential, must be done.

...Many suborganizations within organized psychology have no end of trouble when the transacting of essential business is at hand. Representatives of state associations often complain that very few of their members participate in their important deliberations. The Division of Educational Psychology (Division 15) of the American Psychological Association has over 3,000 members, but only about 20 bothered to attend the annual business meeting held last autumn. The issues arising from the Albee Report, matters which may have far-reaching significance as the future unfolds, are scarcely of passing concern in the minds of the bulk of the members of the APA." . . .

* * * * *

"Which End of the Telescope?", by Samuel H. Cleff, Editor, *Industrial Psychology*, *New Jersey Psychologist*, Winter 1969

In discussion with a clinical psychologist at a recent meeting of NJPA I was amazed and rather disappointed by his depth of ignorance and his hostility toward industrial psychology. His attitude was summarized by his belief that the industrial psychologist develops tests which serve the somehow vicious self-interests of industrial management. I felt that he was looking into the wrong end of the telescope at the world of practitioners and clients and I rather heatedly told him so. Though some words and sentences followed my comment, neither his nor mine could be described with accuracy as communication. Since that encounter I have given some serious thought to the need for building a bridge of mediation between those psychologists who serve clients in private practice or in a publicly supported institutional setting and those who serve in the milieu of private industry or business. Without wanting - or needing - to "build a case" for the work of the industrial psychologist which is not generally known. Much of this data will come from my own experiences as a trained clinical psychologist who, for the last fifteen years, has done most of his professional work in industrial settings.

There are now over seventy-two million people gainfully employed in this country; at least forty-eight million of these people are engaged in privately capitalized enterprises. I take it as a given fact that the productivity of the forty-eight million supports the "non-productive" twenty-four million people. Yet obviously there is a supportive interaction taking place between the two groups such that one is not really possible without the other. It is also generally true that the management of the private sector, as well as of

the public sector organizations, is generally non-participative and non-democratic. My personal observations and experiences as a management consultant to both types of organizations lead me to the definite conclusion that the private sector is significantly more democratic, participative, and developmental in its management philosophy and practices than is the public sector. Though the credit for this belongs to many forces, a large and significant share of the responsibility for causing this change belongs to a relatively small group of industrial psychologists and behavioral scientists. Rather quietly, but persistently, this group has been demonstrating to private sector management the practical, measurable, and growing gains to be achieved from opening their societies. It has always seemed strange to me that the democratic processes on which we insist for the political management of our country's affairs have taken so long to filter down to the management of our economic and other non-political activities.

Industrial psychologists have been leading a quiet and indirect revolution with the objective of bringing this democratization process down to the levels which most affect our daily lives. They have done this through demonstrating in many ways and specific instances what most of us have always believed in principle; that participative management leads to personal and organizational growth and development - in the same way that counseling and psychotherapy are designed to lead to an individual's development and growth as a person. In fact, the demonstrations and measurements developed in industry far outstrip the ability of professional therapists and counselors to demonstrate and measure empirical outcomes of their work with clients.

The reasons for this appear obvious to me. The therapist and counselor seldom observes the practical every day behavior of his clients, while the industrial psychologist must deal with this behavior as the basic stuff of his work. In a very real sense the former are providing the predictors of change and growth and development while the latter are providing the criteria of these. The clinician is dealing in intervening variables, and unfortunately seldom gets the opportunity to close the loop except in symbolic terms, while the industrial psychologist is dealing with the results of changes in the intervening variable relationships, the empirical outcomes. Because of his observation of outcomes from various counseling and therapeutic techniques, the industrial psychologist has been largely instrumental in bringing those techniques to the management toolbox, for experimenting with them, and for expanding their uses and usefulness.

Millions of working individuals who would probably otherwise never seek or know professional help are now getting sympathetic and helpful counseling from their own bosses at work. Millions

more are getting guidance on their personal and vocational development problems in performance appraisals every year. Many millions of semi- and low-skilled workers get at least some semblance of vocational guidance through the selection tests they take in applying for jobs - screened in or out depending on the statistical probability of their success in a job, thus helping them to avoid that most fearful of human situations, the failure of competence. None of these things is done with perfection; some people are screened out of jobs at which they would have succeeded and grown; the counseling of some bosses is clumsy and manipulating; performance appraisals can be inexact and punitive; and so on. Should industrial psychologists have waited until every procedure was proved and validated and pronounced perfect before doing anything? Of course not. They, like other practitioners, deal in the art of the possible and constantly live with the very real and present probability of failure, and like other professionals are constantly engaged in the search for the better ideas and tools which will decrease that probability.

RESEARCH NOTES

Critical Notes on "Seniority and Testing Under Fair Employment Laws", by Cooper and Sobol in the Harvard Law Review, June, 1969*

Floyd L. Ruch
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This critique covers only the testing issue. It is important that lawyers, judges, lawmakers, and psychologists understand that there is another side.

The major premise of Cooper and Sobol as expressed by them on page 1643 is:

"Contrary to popular belief, the likelihood that scores on any particular aptitude test will correlate significantly with performance on any particular job is slim indeed."

From this they conclude that there is no good business reason to use aptitude tests on whites or Negroes. They correctly point out that Negroes in general score significantly below whites on practically all aptitude tests. Their final conclusion is that practically all aptitude tests are therefore discriminatory under Title VII of the Civil Rights Act of 1964.

Several Federal District Court decisions, at least one of which has been upheld by a District Court of Appeals, finds that professionally developed aptitude tests are not discriminatory even if they fail more Negroes than whites and have not been validated for a particular job or group of jobs in the manner specified by the "Guidelines" of the Equal Employment Opportunity Commission. (See decision of Fourth Circuit Court of Appeals in case of Willie S. Griggs et al v. Duke Power Company.)

Let us examine the evidence Cooper and Sobol present to support their major premise. Heavy reliance is placed on an exhaustive study by Ghiselli¹ of industrial experience with aptitude testing.

*Editor's Note: A recent issue of the Harvard Law Review contained an article which should be of great interest to readers of TIP. It generated enough interest to stir one of our members, Floyd L. Ruch, to write a reply which unfortunately the editors of HLR felt inappropriate for publication. Because of its relevance to our members and students of industrial psychology, it is being published here.

¹Ghiselli, Edwin E., The Validity of Occupational Aptitude Tests. John Wiley & Sons, Inc., New York, 1966.

It is instructive to compare the words of Ghiselli in their full context with the out-of-context quotation from him. On page 1644, Cooper and Sobol quote only the underlined words from the full test seen on page 57 of Ghiselli's book:

"Trainability for the industrial occupations is very well predicted and to just about the same extent by tests of intellectual abilities (.40), spatial and mechanical abilities (.39), and motor abilities (.34). With an average validity of .22 it is apparent that measures of perceptual accuracy are less useful.

Though some few specific test do give reasonably good predictions of job proficiency in the industrial occupations as a whole, the general picture is one of quite limited predictive power. A coefficient of the order of .17 described the validity of tests for the industrial occupations. So, although for some specific industrial occupations some tests do give adequate predictions, the over-all trend is one of low validity."

Cooper and Sobol fail to point out that the average validity coefficients reported by Ghiselli are just that - averages. The coefficients for the better tests in a particular situation are invariably higher than the average of those for all tests, good and bad. The authors also fail to point out that competent industrial psychologists use batteries of several of the better tests in making hiring decisions. The predictive power of such a battery is typically greater than that of the one best test in the battery.

Let us consider as an example, experience with scores on nine Employee Aptitude Survey tests taken before training in predicting success in electronic troubleshooting as measured by efficiency in locating malfunctions in a complex system after a period of training.

| Test | Validity Coefficient |
|---------------------------------|----------------------|
| EAS 7 - Verbal Reasoning | .43 |
| EAS 10 - Symbolic Reasoning | .43 |
| EAS 6 - Number Reasoning | .41 |
| EAS 2 - Numerical Ability | .39 |
| EAS 3 - Visual Pursuit | .39 |
| EAS 1 - Verbal Comprehension | .31 |
| EAS 5 - Space Visualization | .30 |
| EAS 8 - Word Fluency | .13 |
| EAS 4 - Visual Speed & Accuracy | .10 |

²Warren, N.D., Dossett, W.F., & Ford, J.S., A Correlational Analysis of Achievement in a Generalized Electronic Troubleshooting Course, ASTIA Document No. AD 146 424 December, 1957.

Using the same method of averaging as was used by Ghiselli, the average correlation is .34. The best two tests, (EAS 7 and EAS 10) each correlate .43. When the multiple correlation is computed for Tests 7, 10, and 3 it comes out .52, better than the best single test and better by far than the average value. There is obviously a "good business reason" to use tests that work this well.

It was with this kind of experience in mind that Ghiselli stated on page 125 of his book:

"Clearly, the grand average validity of a given test for all types of jobs does not describe its real practical value."

Cooper and Sobol do not quote the above words.

Cooper and Sobol fail to point out that most of the studies summarized by Ghiselli were made on present employees after they had been on the job long enough that the gross failures had been eliminated, thus restricting the range of ability both on the tests and on the job, and therefore reducing the value of the obtained validity coefficients, as compared to their true values. It was with all of these considerations (and others too technical to consider in this brief note) that Ghiselli stated in his preface:

"The material contained in this book, a summary of the findings of the many investigators who have been at work in this area since those early days, provided a justification for the efforts of the pioneers -- and for their dreams. It is testimony to the fact that occupational behavior is predictable, and that it is possible to develop objective and impartial means to assess aptitudes for different kinds of work." (Ghiselli, vi)

Let us now examine the implications of the statement on page 1644 that the poor showing of Negroes on aptitude tests is due to cultural factors and that predictive accuracy can occur only where the "equal exposure" assumption is met. While this concept may be basic to the measurement of "general intelligence", the psychological construct of general intelligence is largely irrelevant to the problem of prediction of success in training and in job performance. If the job calls for the use of arithmetic, a professionally developed test of arithmetic will be predictive of success whether or not it measures "general intelligence". If the reasoning of Cooper and Sobol were correct, job-relevant aptitude tests developed on a predominantly white group would underestimate the Negro's success in training and on the job. The weight of the evidence is to the contrary as will be brought out shortly. Such tests are somewhat more likely to overestimate the Negro's performance and thus be "unfair to whites".

Cooper and Sobol, while asserting that aptitude tests are not significantly valid, argue that they are differentially valid for Negroes and for whites. They fail, however, to reference the pioneer study, soon to be discussed, conducted nearly twenty years ago by the U.S. Air Force. They do reference a recent study by Mary Tenopyr without giving her conclusions. As will soon be shown, both studies agree that no differential validity is found. Cooper and Sobol base their case largely on the work of Lopez³ and of Kirkpatrick, Ewen, Barrett and Katzell.⁴

The Lopez study suffers from numerous errors in design and statistical analysis, and therefore permits no conclusion. Some of these errors are:

(1) He states, "We obtained separate correlation coefficients for the white and the Negro appointees [and] corrected them for restriction in range, as described by Thorndike (1949) ..." Such a correction is not possible in view of the fact that he did not know the ethnic origin of applicants who were not appointed.

(2) He used an N of 865 in determining the significance of Pearson coefficients based on as few as 36 cases.

(3) He calculated the significance of Pearson coefficients which had previously been corrected for restriction of range.

(4) He made inferences based on a "significant for one group but not significant for the other" approach rather than testing the significance of the difference between the two coefficients. (See Table 4, page 16 and text.)

On page 27 of Kirkpatrick *et al* are shown the results of 86 comparisons between ethnic groups of the validities obtained when tests were correlated with various criteria of success in employment situations. Of these 86, just 4 were found to be significant at the 5% level. This is almost exactly the number that would be expected on the basis of pure chance. In other words, the number of instances of "significant" differential validity actually is what would be expected if no differential validity exists in the situations studied and the obtained results were due to sampling errors.

In a study of nurses in training in two all-black and two all-white schools, 135 comparisons of test validities between ethnic groups were made. Of these comparisons, 41 were significant at the 5% level, whereas only about 7 would have been expected to arise by chance in the absence of a true differential-validity relationship. This finding, however, is ambiguous for the reason so clearly stated by Kirkpatrick and his co-authors on their page 121, but not quoted by Cooper and Sobol.

³Lopez, Felix M., Current Problems in Test Performance of Job Applicants: I, *Personnel Psychology*, Vol. 19, Number 1 - Spring, 1966.

⁴Kirkpatrick, James J., Ewen, Robert B., Barrett, Richard S., Katzell, Raymond A., *Testing and Fair Employment*, New York University Press, 1968.

"In view of the confounding of race and school in this study, it is conceivable that had each school had mixtures of white and Negro students the above picture of unfairness may not have emerged, i.e., white students may have turned out to achieve higher average licensing test scores than Negroes."

It is technically possible for test scores and criterion scores to correlate equally within each ethnic group and still be unfair. This would occur if the predicted criterion scores of one group were lower than their actual criterion scores. That is, if the intercepts are different. This type of unfairness could work either way. The Kirkpatrick *et al* study revealed no clear evidence of this type of unfairness when job performance was being predicted. In the study of the prediction from test scores of success in nursing training as measured by scores on the state licensing examination, tests of fairness were not possible because of the confounding of race and school. In the words of the authors on their page 122:

"The present situation provided no test of the possibility of unfair practice, because all whites were selected by one school and all Negroes by another."

Cooper and Sobol do not quote this passage.

There have been a number of studies in industry and in the armed forces on the fairness of aptitude tests. The most comprehensive study available to the author of this note (and, of course, to Cooper and Sobol who did not reference it) is by the late Dr. Mary Gordon.⁵

The results of her study based on 8,888 male Air Force trainees, of whom 1,384 were Negroes, in 7 different technical schools in which clerical and mechanical subjects were taught are summarized as follows by Dr. Arthur Melton, Technical Director, and Colonel Herbert N. Cowles, Commander of the cognizant organization:

"The Airman Classification Battery makes an important contribution to the effective assignment of enlisted personnel to various technical schools. Moreover, research has indicated that over-all prediction of school grades is essentially the same for white males, Negro males, and WAF's. However, this comparability in terms of over-all prediction does not preclude the possibility that different minimum qualifying scores should be used to assure that, with reference to potential school success,

⁵Mary A. Gordon, A study in the Applicability of the Same Minimum Qualifying Scores for Technical Schools to White Males, WAF, and Negro Males. *Technical Report 53-34: Personnel Research Laboratory; Human Resources Research Center; Lackland Air Force Base, Texas. November, 1953.*

classification of airmen in the three groups is on the same basis.

The findings of this study indicate that the same minimum qualifying scores are applicable in the classification of white and Negro airmen."

That more recent work in the Air Force confirms this earlier experience and that a similar situation exists in industrial training programs was clearly indicated in a summary of such work given by Tenopyr⁶ at a September, 1969, symposium of the American Psychological Association. She said:

"With respect to the question of whether tests underestimate or overestimate job performance for certain ethnic groups, I feel that we are well on the way to an answer. In a private communication about Air Force research, Tupes (1967), has indicated that in an extensive study involving a large number of training courses, tests were consistently found to overestimate training progress for blacks. However, when education was controlled, the overestimation condition disappeared and it was found that training performance for blacks could be predicted on the same basis as it was for whites. Grant and Bray (1969) have found that tests overestimated training performance for black telephone installers and repairmen. I believe that if we carry our research far enough, we will find few instances in which tests underestimate job or training performance for blacks and will generally find that job criteria for this ethnic group are either properly estimated or overestimated by tests."

In a random sample of 500 applicants for machine-shop trainee jobs with a large firm, Tenopyr found that, with a socioeconomic status measure controlled, there were highly significant mean differences between Anglos and Negroes on each of three Employee Aptitude Survey tests: Verbal Comprehension, Numerical Ability, and Space Visualization. Anglos consistently scored higher than Negroes, particularly on the spatial test.

For a sample of 167 trainees, including 84 Anglos and 83 Negroes, who had been selected on the basis of a minimal critical score on a composite based on the space and the numerical test, R's involving the three tests and ten training achievement criteria, some of them experimentally dependent, ranged from substantial to zero. Comparisons within each of ten pairs of regression equations for a high and a low socioeconomic status group indicated

that, in no case, were either the slopes or the intercepts significantly different for the two groups.

She found that none of ten regression lines computed for Negroes differed significantly in slope from those for Anglos. For six of the ten lines, however, there were significant differences between intercepts for Anglos and Negroes. In each of these six instances putting Negro test means into either the regression equation based on Anglos alone or that based on both Anglos and Negroes would have resulted in predicting average Negro criterion performance to be higher than it actually was.

A similar denial of the "cultural bias" hypothesis was also found in another recent study.⁷ This study was ignored by Cooper and Sobol.

In this study, a total of 287 white and 168 Negro Medical Technicians completed both an eight-test aptitude battery and a Job Knowledge Test. Analysis of the results showed that the aptitude tests never overestimated the job knowledge of the whites but sometimes showed the reverse effect - overestimation of the Negro's job knowledge.

Another recent study relevant to the issue of "cultural bias" and one not mentioned by Cooper and Sobol is reported by Dubin, Osburn and Winick.⁸

It has been hypothesized that Negroes, denied the opportunity to take tests as often as whites, would benefit more when opportunities were available for extra pre-test practice, extra testing time and both of these.

To test the validity of these hypotheses, Forms A and B of four Employee Aptitude Tests were administered to 235 Negro students from a predominantly Negro high school and to 232 white students from a predominantly white high school in the same school system. The tests used were: EAS 2, Numerical Ability; EAS 5, Space Visualization; EAS 6, Numerical Reasoning; and EAS 7, Verbal Reasoning. The three hypotheses were rejected. In the words of the authors: "Implications are that the testing procedure itself does not discriminate between racial groups nor between culturally advantaged and disadvantaged S's."

Aptitude tests, properly used, are objective measures and thus tend to protect the rights of qualified minority group members. If aptitude test were abolished, the employer would be forced to rely even more heavily on the personal interview which is less valid

⁶Tenopyr, Mary L., Presentation in symposium on "Selection of Minority and Disadvantaged Personnel," at the annual meetings of the American Psychological Association, Washington, D.C., September 4, 1967.

⁷Campbell, Joel T., Pike, Lewis W., Flaughner, Ronald L., Prediction of Job Performance for Negro and White Medical Technicians. Educational Testing Service, Princeton, N.J., 1969.

⁸Dubin, Jerry A., Osburn, Hobart, Winick, Darwin M., Speed and Practice: Effects on Negro and White Test Performances, Journal of Applied Psychology, American Psychological Assoc., Washington, D.C., Vol. 53, Number 1, Part 1, February, 1969.

as a selection device than tests, and much more heavily laden with conscious and unconscious racial stereotypes and prejudices harmful to the minority group member's chances of being employed. That the interview does not work well when used by whites with whites is the emphatic conclusion of Marvin Dunnette of the University of Minnesota and Bernard Bass of the University of Pittsburgh.⁹

"The personnel interview continues to be the most widely used method for selecting employees, despite the fact that it is a costly, inefficient, and usually invalid procedure. It is often used to the exclusion of far more thoroughly researched and validated procedures. Even when the interview is used in conjunction with other procedures, it is almost always treated as the final hurdle in the selection process. In fact, other selection methods (e.g., psychological tests) are often regarded simply as supplements to the interview."

This reviewer does agree in a general way with Cooper and Sobol on the moral proposition that only valid (job-related) tests, or other procedures should be used to hire or promote. It should be remembered, however, that several Federal Courts have not found this to be a point of law under Title VII. There is, however, a good business reason and a moral reason to do so.

There are two basic methods of validating tests or other hiring standards: empirical and rational.

Empirical validation procedures are recommended by the EEOC Guidelines and required, when feasible, by the Secretary of Labor's Order on testing of September, 1968. There are two types of empirical validation.

METHOD A - Predictive Validation

All applicants are tested prior to employment but the scores are not used in making the employment decision. Later, the scores are correlated to a measure of training or job success, to see whether those with high scores do substantially better than those with low scores. This is the most elegant method scientifically but is seldom used in its purest form because it is costly, and slow. For the small employer it is not feasible.

METHOD B - Concurrent Validation

Present employees are tested and the scores of those high in job performance are compared with those who are low, to see whether there are significant differences. Despite its shortcomings, this method has been widely used by the United States Employment Service.

The two rational methods of validation are permissible under the testing order when empirical validation is not feasible. These are the methods of content and construct validity. Both require a thorough knowledge of job demands based on careful observation.

METHOD C - Content Validity

This involves a systematic examination of the job and the test content to determine that the test contains a sampling of the knowledge, skills and other behaviors required for the successful performance of the job. Thus a typing test is a valid measure to use in hiring stenographers, although it does not cover all of the domain of stenography. The same can be said for a shorthand test. Both, used together, would give a more complete sampling.

METHOD D - Construct Validity

The construct validity of a test is the extent to which it measures a "theoretical construct" or trait. Examples of such constructs are verbal ability, space visualization and perceptual speed. When careful job analysis shows that workers must read blueprints, a test of space visualization is valid as part of the employment procedure.

Method B has the disadvantage that in situations where race discrimination has been practiced in the past, minorities will not be adequately represented. Methods C and D do not suffer this disadvantage. There are many life situations in which they are the only ones available. A prime example is the selection of astronauts where they appear to have been quite effective. To rule out the use of Methods C and D would seriously handicap the smaller employers whose work forces are not large enough to support the use of more elegant validation designs. Fortunately, Title VII, as interpreted by the courts, permits the use of these methods.

Cooper and Sobol would go along with the EEOC Guidelines and permit only Methods A and B. The latter two, however, are by far more widely used in actual practice.

Cooper and Sobol quote three instances in the vast experience of the United States Employment Service in which job analysis and empirical validation appeared to them to give conflicting results. On page 1657 they note quite correctly that a test of manual dexterity did not correlate significantly with job performance as "Experimental Assembler". No industrial psychologist practiced in the use of job analysis would expect it to. The test referred to measures the speed of rather gross arm, hand, and finger movements such as are involved in low precision, highly repetitive production assembly operations. The "Experimental Assembler" is not a pro-

⁹Dunnette, M.D. and Bass, B.M., Behavioral Scientists and Personnel Management. Industrial Relations, II (1963) 115-130.

duction assembler as is seen from the job description in the Dictionary of Occupational Titles:¹⁰

"Assembles, inspects, tests, and adjusts a variety of optical, electrical, and mechanical devices on pilot-run basis to improve assembly methods and to discover and correct deficiencies in materials, specifications, and equipment prior to production runs: Reads and interprets blueprints, diagrams, schematics, and narrative instructions to determine required parts and tools and lays out workbench to provide assembly arrangement. Assembles up to 100 units or components of optical, electrical, or mechanical devices, such as slide projectors, plastic tape dispensers, thermal-process duplicating machines, and ribbon-bow-making machines, using power tools and hand tools. Inspects, tests and adjusts assembled devices for specified functioning, using light meter, ammeter, voltmeter, stopwatch, rulers, feeler gages, spring tension tester, torque tester, and depth micrometer."

On page 93 of the Manual for the General Aptitude Test Battery¹¹, validity coefficients are listed for seven jobs titled "Assembler". The validity coefficients for the manual dexterity test are: .21; .31; .52; .50; .55; .46; and .28, all of these except the first are significant beyond the five percent level.

When Cooper and Sobol tell us that the form perception aptitude score was not relevant to the job of "Draftsman, Architectural", nobody should be surprised. This is a test of perceptual speed as required in simple, rapid clerical and visual inspection operations, elements that are not prominently involved in the work of an architectural draftsman.

The case of Air-Traffic-Control Specialist, Tower, is less obvious. A reading of the job description in the Dictionary of Occupational Titles leaves little doubt in the mind of this writer but that the space factor is very important in it. More to the point, the work of Dr. John T. Dailey, Chief of Psychology Staff; Office of Aviation Medicine; Federal Aviation Administration quite clearly indicates that the space ability factor is very important in the prediction of success in training and on-the-job performance. He states:¹²

¹⁰Vol. I Definitions of Titles, Third Edition, U.S. Government Printing Office, Washington, D.C., 1965.

¹¹Section III: Development, U.S. Government Printing Office, Washington, D.C., October 1967.

¹²Personal communication, 26 September, 1969.

"In air traffic control, once the person is through the learning phase, individual differences in rated performance are largely error variance plus personality characteristics, resistance to stress and the like and you should not expect them to be related to aptitude factors.

These are many studies of the validity of aptitude tests for air traffic control specialists and they typically find that spatial tests have good validity in predicting training success. They have also been found valid in predicting whether an entry controller becomes a full fledged journeyman within six years in a followup study."

There are many situations in which a concurrent validity study using supervisors' ratings, as in this instance, can go wrong. Failure to correct for age and experience is just one of them. It is well known that space ability declines more rapidly with age than do the verbal and numerical factors found in the USES study to be predictive. It is also well known that older persons who have been on the job longer may be overrated by their superiors.

The joint effect of these two factors is to cause the obtained validity coefficient for the space factor to be lower than its true value. This is but one instance in which a job analysis can actually be superior to an empirical validity study in identifying job aptitude requirements.

In using job analysis for this purpose the psychologist brings to bear a generality of experience, his own and that of many others as it is recorded in the psychological literature. To be on the safe side, this method should be combined with Method A. A study of predictive validity should be made when a significant number of cases have been built up. The appropriate correction for restriction of range can then be applied to the obtained validity coefficients. This will permit a fine tuning of the selection process, and compliance with the Department of Labor's Order on testing.

In using this combined method, job analysis tells us which tests to use, and cutting scores are set with reference to appropriate occupational norms. A record of the scores and ethnic classification of all applicants should be kept to permit determination of validity within ethnic groups and fairness of cutting scores.

Cooper and Sobol indulge in the misleading practice of relating a validity coefficient to the percentage of variance accounted for in the criterion of job performance. They state on page 1644:

"Moreover, even when tests are found of predictive value they generally account for only a small portion of the variance in job performance, generally around fifteen to twenty percent."

On page 1661 they state that:

"This means in many cases that a test which statistically accounts for only four or five percent of all the variance in successful job performance is considered valid."

The percentage of variance accounted for is a concept used by statisticians and not a measure of a test's practical value. It is computed by squaring the correlation coefficient. Thus, a test whose validity is .20 accounts for .04 or 4% of the variance in job performance. However, the value of the test is proportional to its validity coefficient. Brogden has shown that the validity coefficient is equal to the improvement in average job performance which an employer would realize by hiring on the basis of a test, divided by the maximum possible improvement - that is, the improvement which would be realized by hiring on the basis of a test of perfect validity.¹³

Cronbach has given us two illustrative examples of how Brogden's rule works out.¹⁴

"The best single rule of thumb for interpreting validity coefficients is the one developed by Brogden (1949). Making certain reasonable assumptions, he showed that the benefit from a selection program increases in proportion to the validity coefficient. Suppose the 40 applicants out of 100 who score highest on a test are hired. We can consider the average production of randomly selected men as a baseline. An ideal test would pick the forty men who later earn the highest criterion score; the average production of these men is the maximum that any selection plan could yield. A test with validity .50, then, will yield an average production halfway between the base level and the ideal. To be concrete, suppose the average, randomly selected worker assembles 400 gadgets per day, and the perfectly selected group of workers turns out 600. Then a test with validity .50 will choose a group whose average production is 500 gadgets, and a test of validity .20 will select workers with an average production of 440 gadgets."

Thus a validity coefficient of .20 permits the selection of a group whose production is ten percent higher not four percent as Cooper and Sobol imply. This gain of ten percent in productivity would mean a gain of much more than that in profitability - espe-

¹³Brogden, H.E., A new coefficient: application to biserial correlation and to estimation of selective efficiency. *Psychometrika*, 1949 14 169-182.

¹⁴Cronbach, L.J., *Essentials of Psychological Testing*, 2nd ed. Harper and Brothers, N.Y., 1960.

cially when labor cost are a large fraction of total cost and when the break-even point is high. This all means that there is a good business reason to use tests of relatively low validity when more valid methods of selection are not available. It must be emphasized in this connection that the practical value of a test or other selection device depends on the selection ratio as well as the magnitude of the validity coefficient.

Still another false impression related to the practical value of tests may be left by Cooper and Sobol from a lengthy footnote on page 1678. Here they imply that the lowering of the passing score in Project 100,000 made no appreciable difference in the quality of the low scoring recruits admitted to the Armed Services.¹⁵

They point out that 95% of the "new standards" men succeeded in completing basic training (a more exact figure is 95.4%). This means that 4.6% washed out.

Although not stated by Cooper and Sobol, only 2.3% of the "old standards" men washed out. These figures support the conclusion that the "new standards" men are twice as likely to wash out as are those of the control group. The discharge rate for entry-level skill training is even higher. The factor by which discharge rate for "new standards" men is greater than that of other men is 2.2 for the Army, 2.1 for Navy, and 3.1 for the Air Force. To many taxpayers this experience is a "good business reason" to maintain the higher standard of admission unless faced by a serious manpower shortage as in wartime. There are of course, good "social welfare reasons" to lower standards and incur the greater training costs consequent to this action. However, good business reasons and good social welfare reasons should not be confused.

In closing, this critic would like to express his wholehearted agreement with Cooper and Sobol when they say on page 1678:

"There are many conditions to hire and promotion which have no more justification than employer whim; the evaluation and abandonment of these practices would probably be beneficial, rather than detrimental to the employer, in opening up a large untapped reservoir of potentially valuable employees."

The use of job-related aptitude tests to replace the prejudice-laden personal interview and other arbitrary standards such as unrealistic educational requirements and unevaluated arrest records places in the hands of management a powerful tool in achieving this profitable and socially desirable goal.

Testing deserves a more realistic appraisal than that given by Cooper and Sobol. Fortunately, our courts appear to be quite capable of making this appraisal.

¹⁵Office of the Secretary of Defense. *Project One Hundred Thousand*, March, 1969. Page 24.

EDITOR'S NOTE

The Executive Committee has been concerned about the expenses of publishing TIP and this issue incorporates some suggestions made by the Committee and also by a few members who have written; for example, only a brief summary of the Executive Committee minutes are published.

Secondly you will note that the type of this issue is not as pleasing as in past issues. This reduces our cost per page somewhat. Our costs per page in the past were much less than any other Divisional newsletter and to reduce publication costs more would probably involve changing to a mimeographed newsletter. This latter suggestion incidentally was discussed at the January meeting.

Since we have cut costs as much as possible, what can we do to continue publishing a newsletter. Three choices appear to be available: (A) increase Divisional dues; (B) increase our membership; and (C) get some advertising.

Several years ago a respected colleague suggested raising dues to \$50.00 so that "we could separate the men from the boys --find out who the real industrial psychologists are." The Executive Committee turned this suggestion down. With respect to choice (B) there are many APA members who are practicing Industrial Psychologists who are not Division 14 members. For example, the Industrial Psychology Editor of the New Jersey Psychologist. I believe that we should all help our membership chairman, George S. Speer, by sending him names of such persons.

The third and first choices are probably the things that would increase our treasury most. Since this is so close to income tax time, I'd hesitate to recommend the first. Your Business Editor, George Speer and I need all the help we can get on this third choice. You authors write us and your publishers and we'll send them a rate sheet. Incidentally, starting now we'll accept employment ads.

I and the Executive Committee would appreciate any comments you have on the Newsletter. (And thank you Virginia for yours!)

John R. Boulger

NOTICE

The Executive Committee has agreed to open TIP to advertising for both display ads and employment notices. For information on rates write the Business Manager at the following address:

GEORGE S. SPEER
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